

Gunter, Jason

From: Nations, Mark <mnations@doerun.com>
Sent: Monday, August 11, 2014 12:48 PM
To: Gunter, Jason
Cc: Yingling, Mark; James, Kevin; Neaville, Chris; Montgomery, Michael;
robert.hinkson@dnr.mo.gov; brandon.wiles@dnr.mo.gov; Ty Morris (TMorris@barr.com);
Hedrick, Samantha K.
Subject: July Leadwood Progress Report
Attachments: LW_07-14.doc; 2014-07-17 LW NPDES Pace Lab Report.pdf

Jason,
Attached is the July Progress report.
Mark

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**THE
DOE RUN
COMPANY**

Remediation Group

Mark Nations
Mining Properties Manager
mnations@doerun.com

August 11, 2014

Mr. Jason Gunter
Remedial Project Manager
U.S. Environmental Protection Agency
Region 7 - Superfund Branch
11201 Renner Blvd.
Lenexa, KS 66219

Re: The Doe Run Company - Leadwood Mine Tailings Site Monthly Progress Report

Dear Mr. Gunter:

As required by Article VI, Section 50 of the Unilateral Administrative Order (Docket No. CERCLA-07-2006-0272) for the referenced project and on behalf of The Doe Run Company, the progress report for the period July 1, 2014 through July 31, 2014 is enclosed. If you have any questions or comments, please call me at 573-518-0800.

Sincerely,



Mark Nations
Mining Properties Manager

Enclosures

c: Mark Yingling – TDRC (electronic only)
Kevin James – TDRC (electronic only)
Chris Neaville – TDRC (electronic only)
Michael Montgomery – TDRC (electronic only)
Robert Hinkson – MDNR
Brandon Wiles – MDNR
Ty Morris – Barr Engineering

Leadwood Mine Tailings Site
Leadwood, Missouri
Removal Action - Monthly Progress Report
Period: July 1, 2014 – July 31, 2014

1. Actions Performed or Completed This Period:

- a. Work continued on the development of the Post Removal Site Control Plan for the site.
- b. Work continued on a long-term surface water management plan for the site. This document was submitted to EPA and MDNR for review on July 2, 2014.
- c. Doe Run received comments concerning the surface water management plan from MDNR on July 30, 2014. Based on discussions with EPA, it is anticipated that Doe Run will receive comments from EPA during the next period.
- d. In accordance with the verbal approval received from EPA, Doe Run began the clearing and grubbing activities in the East Seep and Erosion Area associated with the surface water management plan. The vegetation removed during this activity was piled on the north side of the closed quarry. As of the end of the period, work on this task had been completed.

2. Data and Results Received This Period:

- a. During this period, water samples were collected from downstream of Leadwood Dam and the East Seep and Erosion Area, as well as from upstream and downstream of the confluence of Eaton Creek with Big River. The analytical results for this event are included with this progress report.
- b. During this period, the ambient air monitoring samples for June were processed and the Ambient Air Monitoring Report for June 2014 was completed. A copy of the Ambient Air Monitoring Report for June is attached.

3. Scheduled Activities not Completed This Period:

- a. None.

4. Planned Activities for Next Period:

- a. Address comments from MDNR and EPA on the long-term surface water management plan, finalize the document, and resubmit the document.
- b. Finalize and submit the Post Removal Site Control Plan for the site.
- c. Complete monthly water sampling activities as described in the Removal Action Work Plan.
- d. Complete air monitoring activities as described in the Removal Action Work Plan.

5. Changes in Personnel:

- a. None.

6. Issues or Problems Arising This Period:

- a. None.

7. Resolution of Issues or Problems Arising This Period:

- a. None.

July 25, 2014

Amy Sanders
The Doe Run Company
P. O. Box 500
Viburnum, MO 65566

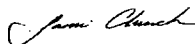
RE: Project: NPDES (Leadwood)
Pace Project No.: 60173907

Dear Amy Sanders:

Enclosed are the analytical results for sample(s) received by the laboratory on July 18, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jamie Church
jamie.church@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: NPDES (Leadwood)

Pace Project No.: 60173907

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: NPDES (Leadwood)

Pace Project No.: 60173907

| Lab ID | Sample ID | Matrix | Date Collected | Date Received |
|-------------|--------------------------------|--------|----------------|----------------|
| 60173907001 | 16400 / LEADWOOD DOWNSTREAM | Water | 07/17/14 10:16 | 07/18/14 08:30 |
| 60173907002 | 16401 / LEADWOOD UPSTREAM | Water | 07/17/14 09:59 | 07/18/14 08:30 |
| 60173907003 | 16402 / LEADWOOD 001 | Water | 07/17/14 12:26 | 07/18/14 08:30 |
| 60173907004 | 16403 / LEADWOOD 002 | Water | 07/17/14 12:12 | 07/18/14 08:30 |

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SAMPLE ANALYTE COUNT

Project: NPDES (Leadwood)
Pace Project No.: 60173907

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|-------------|-----------------------------|-----------|----------|-------------------|------------|
| 60173907001 | 16400 / LEADWOOD DOWNSTREAM | EPA 200.7 | TDS | 6 | PASI-K |
| | | EPA 200.7 | SMW | 3 | PASI-K |
| | | SM 2540D | NDL | 1 | PASI-K |
| | | EPA 300.0 | OL | 1 | PASI-K |
| 60173907002 | 16401 / LEADWOOD UPSTREAM | EPA 200.7 | TDS | 6 | PASI-K |
| | | EPA 200.7 | SMW | 3 | PASI-K |
| | | SM 2540D | NDL | 1 | PASI-K |
| | | EPA 300.0 | OL | 1 | PASI-K |
| 60173907003 | 16402 / LEADWOOD 001 | EPA 200.7 | TDS | 3 | PASI-K |
| | | SM 2540D | NDL | 1 | PASI-K |
| | | SM 2540F | NDL | 1 | PASI-K |
| | | EPA 300.0 | OL | 1 | PASI-K |
| 60173907004 | 16403 / LEADWOOD 002 | EPA 200.7 | TDS | 3 | PASI-K |
| | | SM 2540D | NDL | 1 | PASI-K |
| | | SM 2540F | NDL | 1 | PASI-K |
| | | EPA 300.0 | OL | 1 | PASI-K |

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NPDES (Leadwood)

Pace Project No.: 60173907

Sample: 16400 / LEADWOOD **Lab ID: 60173907001** Collected: 07/17/14 10:16 Received: 07/18/14 08:30 Matrix: Water
DOWNSTREAM

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---------------|-------|------|------|----|----------------|----------------|------------|------|
| 200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 | | | | | | | | | |
| Cadmium | ND | ug/L | 5.0 | 0.56 | 1 | 07/18/14 17:30 | 07/24/14 10:48 | 7440-43-9 | |
| Calcium | 43500 | ug/L | 100 | 7.8 | 1 | 07/18/14 17:30 | 07/24/14 10:48 | 7440-70-2 | |
| Lead | 6.2 | ug/L | 5.0 | 2.2 | 1 | 07/18/14 17:30 | 07/24/14 10:48 | 7439-92-1 | |
| Magnesium | 25100 | ug/L | 50.0 | 17.0 | 1 | 07/18/14 17:30 | 07/24/14 10:48 | 7439-95-4 | |
| Total Hardness by 2340B | 212000 | ug/L | 500 | | 1 | 07/18/14 17:30 | 07/24/14 10:48 | | |
| Zinc | ND | ug/L | 50.0 | 12.5 | 1 | 07/18/14 17:30 | 07/24/14 10:48 | 7440-66-6 | |
| 200.7 Metals, Dissolved (LF) Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 | | | | | | | | | |
| Cadmium, Dissolved | ND | ug/L | 5.0 | 0.56 | 1 | 07/22/14 16:25 | 07/23/14 15:54 | 7440-43-9 | |
| Lead, Dissolved | ND | ug/L | 5.0 | 2.2 | 1 | 07/22/14 16:25 | 07/23/14 15:54 | 7439-92-1 | |
| Zinc, Dissolved | ND | ug/L | 50.0 | 12.5 | 1 | 07/22/14 16:25 | 07/23/14 15:54 | 7440-66-6 | |
| 2540D Total Suspended Solids Analytical Method: SM 2540D | | | | | | | | | |
| Total Suspended Solids | ND | mg/L | 5.0 | 5.0 | 1 | | 07/22/14 10:57 | | |
| 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 | | | | | | | | | |
| Sulfate | 29.7 | mg/L | 2.0 | 0.11 | 2 | | 07/22/14 19:13 | 14808-79-8 | |

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ANALYTICAL RESULTS

Project: NPDES (Leadwood)
Pace Project No.: 60173907

Sample: 16401 / LEADWOOD UPSTREAM **Lab ID: 60173907002** Collected: 07/17/14 09:59 Received: 07/18/14 08:30 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---------|-------|------|-------|----|----------------|----------------|------------|------|
| 200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 | | | | | | | | | |
| Cadmium | ND | ug/L | 5.0 | 0.56 | 1 | 07/18/14 17:30 | 07/24/14 10:51 | 7440-43-9 | |
| Calcium | 41700 | ug/L | 100 | 7.8 | 1 | 07/18/14 17:30 | 07/24/14 10:51 | 7440-70-2 | |
| Lead | ND | ug/L | 5.0 | 2.2 | 1 | 07/18/14 17:30 | 07/24/14 10:51 | 7439-92-1 | |
| Magnesium | 25400 | ug/L | 50.0 | 17.0 | 1 | 07/18/14 17:30 | 07/24/14 10:51 | 7439-95-4 | |
| Total Hardness by 2340B | 209000 | ug/L | 500 | | 1 | 07/18/14 17:30 | 07/24/14 10:51 | | |
| Zinc | ND | ug/L | 50.0 | 12.5 | 1 | 07/18/14 17:30 | 07/24/14 10:51 | 7440-66-6 | |
| 200.7 Metals, Dissolved (LF) Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 | | | | | | | | | |
| Cadmium, Dissolved | ND | ug/L | 5.0 | 0.56 | 1 | 07/22/14 16:25 | 07/23/14 15:57 | 7440-43-9 | |
| Lead, Dissolved | ND | ug/L | 5.0 | 2.2 | 1 | 07/22/14 16:25 | 07/23/14 15:57 | 7439-92-1 | |
| Zinc, Dissolved | ND | ug/L | 50.0 | 12.5 | 1 | 07/22/14 16:25 | 07/23/14 15:57 | 7440-66-6 | |
| 2540D Total Suspended Solids Analytical Method: SM 2540D | | | | | | | | | |
| Total Suspended Solids | 13.0 | mg/L | 5.0 | 5.0 | 1 | | 07/22/14 10:57 | | |
| 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 | | | | | | | | | |
| Sulfate | 19.4 | mg/L | 1.0 | 0.098 | 1 | | 07/22/14 11:39 | 14808-79-8 | |

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ANALYTICAL RESULTS

Project: NPDES (Leadwood)

Pace Project No.: 60173907

Sample: 16402 / LEADWOOD 001 **Lab ID: 60173907003** Collected: 07/17/14 12:26 Received: 07/18/14 08:30 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|--|---------|---------|------|------|----|----------------|----------------|------------|------|
| 200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 | | | | | | | | | |
| Cadmium | ND | ug/L | 5.0 | 0.56 | 1 | 07/18/14 17:30 | 07/24/14 10:53 | 7440-43-9 | |
| Lead | ND | ug/L | 5.0 | 2.2 | 1 | 07/18/14 17:30 | 07/24/14 10:53 | 7439-92-1 | |
| Zinc | 725 | ug/L | 50.0 | 12.5 | 1 | 07/18/14 17:30 | 07/24/14 10:53 | 7440-66-6 | |
| 2540D Total Suspended Solids Analytical Method: SM 2540D | | | | | | | | | |
| Total Suspended Solids | ND | mg/L | 5.0 | 5.0 | 1 | | 07/22/14 10:57 | | |
| 2540F Total Settleable Solids Analytical Method: SM 2540F | | | | | | | | | |
| Total Settleable Solids | ND | mL/L/hr | 0.20 | 0.20 | 1 | | 07/18/14 14:55 | | |
| 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 | | | | | | | | | |
| Sulfate | 150 | mg/L | 20.0 | 1.1 | 20 | | 07/22/14 19:27 | 14808-79-8 | |

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ANALYTICAL RESULTS

Project: NPDES (Leadwood)
Pace Project No.: 60173907

Sample: 16403 / LEADWOOD 002 Lab ID: 60173907004 Collected: 07/17/14 12:12 Received: 07/18/14 08:30 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---------|---------|------|------|----|----------------|----------------|------------|------|
| 200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 | | | | | | | | | |
| Cadmium | ND | ug/L | 5.0 | 0.56 | 1 | 07/18/14 17:30 | 07/24/14 11:00 | 7440-43-9 | |
| Lead | 49.6 | ug/L | 5.0 | 2.2 | 1 | 07/18/14 17:30 | 07/24/14 11:00 | 7439-92-1 | |
| Zinc | 2880 | ug/L | 50.0 | 12.5 | 1 | 07/18/14 17:30 | 07/24/14 11:00 | 7440-66-6 | |
| 2540D Total Suspended Solids Analytical Method: SM 2540D | | | | | | | | | |
| Total Suspended Solids | ND | mg/L | 5.0 | 5.0 | 1 | | 07/22/14 10:57 | | |
| 2540F Total Settleable Solids Analytical Method: SM 2540F | | | | | | | | | |
| Total Settleable Solids | ND | mL/L/hr | 0.20 | 0.20 | 1 | | 07/18/14 14:55 | | |
| 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 | | | | | | | | | |
| Sulfate | 343 | mg/L | 50.0 | 2.8 | 50 | | 07/22/14 19:42 | 14808-79-8 | |

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QUALITY CONTROL DATA

Project: NPDES (Leadwood)
Pace Project No.: 60173907

QC Batch: MPRP/28119 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60173907001, 60173907002, 60173907003, 60173907004

METHOD BLANK: 1412785 Matrix: Water
Associated Lab Samples: 60173907001, 60173907002, 60173907003, 60173907004

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|-------------------------|-------|--------------|-----------------|----------------|------------|
| Cadmium | ug/L | ND | 5.0 | 07/24/14 10:33 | |
| Calcium | ug/L | ND | 100 | 07/24/14 10:33 | |
| Lead | ug/L | ND | 5.0 | 07/24/14 10:33 | |
| Magnesium | ug/L | ND | 50.0 | 07/24/14 10:33 | |
| Total Hardness by 2340B | ug/L | ND | 500 | 07/24/14 10:33 | |
| Zinc | ug/L | ND | 50.0 | 07/24/14 10:33 | |

LABORATORY CONTROL SAMPLE: 1412786

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|-------------------------|-------|-------------|------------|-----------|--------------|------------|
| Cadmium | ug/L | 1000 | 1040 | 104 | 85-115 | |
| Calcium | ug/L | 10000 | 10000 | 100 | 85-115 | |
| Lead | ug/L | 1000 | 1020 | 102 | 85-115 | |
| Magnesium | ug/L | 10000 | 10100 | 101 | 85-115 | |
| Total Hardness by 2340B | ug/L | | 66700 | | | |
| Zinc | ug/L | 1000 | 911 | 91 | 85-115 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1412787 1412788

| Parameter | Units | 60173939001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|-------------------------|-------|--------------------|----------------|-----------------|-----------|------------|----------|-----------|--------------|-----|---------|------|
| Cadmium | ug/L | ND | 1000 | 1000 | 1050 | 1050 | 105 | 105 | 70-130 | 1 | 10 | |
| Calcium | ug/L | 62000 | 10000 | 10000 | 72400 | 71900 | 104 | 99 | 70-130 | 1 | 9 | |
| Lead | ug/L | 45.6 | 1000 | 1000 | 992 | 991 | 95 | 95 | 70-130 | 0 | 10 | |
| Magnesium | ug/L | 22700 | 10000 | 10000 | 32100 | 32100 | 95 | 94 | 70-130 | 0 | 9 | |
| Total Hardness by 2340B | ug/L | 248000 | | | 313000 | 312000 | | | | 1 | | |
| Zinc | ug/L | 771 | 1000 | 1000 | 1660 | 1660 | 89 | 89 | 70-130 | 0 | 11 | |

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NPDES (Leadwood)
Pace Project No.: 60173907

QC Batch: MPRP/28161 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Dissolved
Associated Lab Samples: 60173907001, 60173907002

METHOD BLANK: 1414353 Matrix: Water
Associated Lab Samples: 60173907001, 60173907002

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|--------------------|-------|--------------|-----------------|----------------|------------|
| Cadmium, Dissolved | ug/L | ND | 5.0 | 07/23/14 15:43 | |
| Lead, Dissolved | ug/L | ND | 5.0 | 07/23/14 15:43 | |
| Zinc, Dissolved | ug/L | ND | 50.0 | 07/23/14 15:43 | |

LABORATORY CONTROL SAMPLE: 1414354

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|--------------------|-------|-------------|------------|-----------|--------------|------------|
| Cadmium, Dissolved | ug/L | 1000 | 1020 | 102 | 85-115 | |
| Lead, Dissolved | ug/L | 1000 | 1010 | 101 | 85-115 | |
| Zinc, Dissolved | ug/L | 1000 | 943 | 94 | 85-115 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1414355 1414356

| Parameter | Units | 60173907002 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|--------------------|-------|--------------------|----------------|-----------------|-----------|------------|----------|-----------|--------------|-----|---------|------|
| Cadmium, Dissolved | ug/L | ND | 1000 | 1000 | 1030 | 1020 | 103 | 102 | 70-130 | 1 | 10 | |
| Lead, Dissolved | ug/L | ND | 1000 | 1000 | 1000 | 996 | 100 | 99 | 70-130 | 1 | 10 | |
| Zinc, Dissolved | ug/L | ND | 1000 | 1000 | 941 | 935 | 94 | 93 | 70-130 | 1 | 11 | |

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QUALITY CONTROL DATA

Project: NPDES (Leadwood)
Pace Project No.: 60173907

QC Batch: WET/49169 Analysis Method: SM 2540D
QC Batch Method: SM 2540D Analysis Description: 2540D Total Suspended Solids
Associated Lab Samples: 60173907001, 60173907002, 60173907003, 60173907004

METHOD BLANK: 1413951 Matrix: Water
Associated Lab Samples: 60173907001, 60173907002, 60173907003, 60173907004

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|------------------------|-------|--------------|-----------------|----------------|------------|
| Total Suspended Solids | mg/L | ND | 5.0 | 07/22/14 10:54 | |

SAMPLE DUPLICATE: 1413952

| Parameter | Units | 60173878002 Result | Dup Result | RPD | Max RPD | Qualifiers |
|------------------------|-------|--------------------|------------|-----|---------|------------|
| Total Suspended Solids | mg/L | 260 | 234 | 11 | 10 | D6 |

SAMPLE DUPLICATE: 1413953

| Parameter | Units | 60173883001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|------------------------|-------|--------------------|------------|-----|---------|------------|
| Total Suspended Solids | mg/L | 320 | 314 | 2 | 10 | |

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QUALITY CONTROL DATA

Project: NPDES (Leadwood)
Pace Project No.: 60173907

QC Batch: WETA/30329 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60173907001, 60173907003, 60173907004

METHOD BLANK: 1413889 Matrix: Water
Associated Lab Samples: 60173907001, 60173907003, 60173907004

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|-----------|-------|--------------|-----------------|----------------|------------|
| Sulfate | mg/L | ND | 1.0 | 07/22/14 15:08 | |

LABORATORY CONTROL SAMPLE: 1413890

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|-----------|-------|-------------|------------|-----------|--------------|------------|
| Sulfate | mg/L | 5 | 4.9 | 98 | 90-110 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1413891 1413892

| Parameter | Units | 60173667001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | Max RPD | Qual |
|-----------|-------|--------------------|----------------|-----------------|-----------|------------|----------|-----------|--------------|---------|------|
| Sulfate | mg/L | 26.6 | 10 | 10 | 36.7 | 36.8 | 101 | 102 | 80-120 | 0 15 | |

MATRIX SPIKE SAMPLE: 1414254

| Parameter | Units | 60173904001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|-----------|-------|--------------------|-------------|-----------|----------|--------------|------------|
| Sulfate | mg/L | 253 | 250 | 497 | 97 | 80-120 | |

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QUALITY CONTROL DATA

Project: NPDES (Leadwood)
Pace Project No.: 60173907

| | | | |
|-------------------------|-------------|-----------------------|-----------------|
| QC Batch: | WETA/30330 | Analysis Method: | EPA 300.0 |
| QC Batch Method: | EPA 300.0 | Analysis Description: | 300.0 IC Anions |
| Associated Lab Samples: | 60173907002 | | |

METHOD BLANK: 1413895 Matrix: Water
Associated Lab Samples: 60173907002

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|-----------|-------|--------------|-----------------|----------------|------------|
| Sulfate | mg/L | ND | 1.0 | 07/22/14 10:41 | |

LABORATORY CONTROL SAMPLE: 1413896

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|-----------|-------|-------------|------------|-----------|--------------|------------|
| Sulfate | mg/L | 5 | 4.9 | 98 | 90-110 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1414035 1414036

| Parameter | Units | 60173991001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|-----------|-------|--------------------|----------------|-----------------|-----------|------------|----------|-----------|--------------|-----|---------|------|
| Sulfate | mg/L | 374 | 250 | 250 | 610 | 606 | 95 | 93 | 80-120 | 1 | 15 | |

MATRIX SPIKE SAMPLE: 1414037

| Parameter | Units | 60173991002 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|-----------|-------|--------------------|-------------|-----------|----------|--------------|------------|
| Sulfate | mg/L | 166 | 250 | 405 | 96 | 80-120 | |

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

QUALIFIERS

Project: NPDES (Leadwood)
Pace Project No.: 60173907

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

D6 The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: NPDES (Leadwood)
Pace Project No.: 60173907

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|-------------|--------------------------------|-----------------|------------|-------------------|------------------|
| 60173907001 | 16400 / LEADWOOD DOWNSTREAM | EPA 200.7 | MPRP/28119 | EPA 200.7 | ICP/21248 |
| 60173907002 | 16401 / LEADWOOD UPSTREAM | EPA 200.7 | MPRP/28119 | EPA 200.7 | ICP/21248 |
| 60173907003 | 16402 / LEADWOOD 001 | EPA 200.7 | MPRP/28119 | EPA 200.7 | ICP/21248 |
| 60173907004 | 16403 / LEADWOOD 002 | EPA 200.7 | MPRP/28119 | EPA 200.7 | ICP/21248 |
| 60173907001 | 16400 / LEADWOOD DOWNSTREAM | EPA 200.7 | MPRP/28161 | EPA 200.7 | ICP/21277 |
| 60173907002 | 16401 / LEADWOOD UPSTREAM | EPA 200.7 | MPRP/28161 | EPA 200.7 | ICP/21277 |
| 60173907001 | 16400 / LEADWOOD DOWNSTREAM | SM 2540D | WET/49169 | | |
| 60173907002 | 16401 / LEADWOOD UPSTREAM | SM 2540D | WET/49169 | | |
| 60173907003 | 16402 / LEADWOOD 001 | SM 2540D | WET/49169 | | |
| 60173907004 | 16403 / LEADWOOD 002 | SM 2540D | WET/49169 | | |
| 60173907003 | 16402 / LEADWOOD 001 | SM 2540F | WET/49120 | | |
| 60173907004 | 16403 / LEADWOOD 002 | SM 2540F | WET/49120 | | |
| 60173907001 | 16400 / LEADWOOD DOWNSTREAM | EPA 300.0 | WETA/30329 | | |
| 60173907002 | 16401 / LEADWOOD UPSTREAM | EPA 300.0 | WETA/30330 | | |
| 60173907003 | 16402 / LEADWOOD 001 | EPA 300.0 | WETA/30329 | | |
| 60173907004 | 16403 / LEADWOOD 002 | EPA 300.0 | WETA/30329 | | |

REPORT OF LABORATORY ANALYSIS

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WO#: 60173907



60173907



Sample Condition Upon Receipt

Client Name: The Doe Run Company

Courier: Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 7706 2744 6273 Pace Shipping Label Used? Yes ☐ No ☐

Custody Seal on Cooler/Box Present: Yes ☐ No ☒ Seals intact: Yes ☐ No ☒

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ 2pc

Thermometer Used: T-239 / T-194

Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 2.4

Date and Initials of person examining contents: 10/7/12

Temperature should be above freezing to 6°C

| | | |
|--|---|---|
| Chain of Custody present: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 1. |
| Chain of Custody filled out: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 2. |
| Chain of Custody relinquished: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 3. |
| Sampler name & signature on COC: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 4. |
| Samples arrived within holding time: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 5. |
| Short Hold Time analyses (<72hr): | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 6. <u>Self Solids</u> |
| Rush Turn Around Time requested: | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | 7. |
| Sufficient volume: | <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | 8. <u>Insufficient unpreserved volume</u> |
| Correct containers used: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | |
| Pace containers used: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 9. |
| Containers intact: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 10. |
| Unpreserved 5035A soils frozen w/in 48hrs? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | 11. |
| Filtered volume received for dissolved tests? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | 12. |
| Sample labels match COC: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | |
| Includes date/time/ID/analyses Matrix: <u>WT</u> | | 13. |
| All containers needing preservation have been checked. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | |
| All containers needing preservation are found to be in compliance with EPA recommendation. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 14. |
| Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Initial when completed |
| Trip Blank present: | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Lot # of added preservative |
| Pace Trip Blank lot # (if purchased): | | 15. |
| Headspace in VOA vials (>6mm): | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | 16. |
| Project sampled in USDA Regulated Area: | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | 17. List State: |

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: _____

Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature]

Date: 7/18/14

Section C

Invoice Information:

Page: 1 of 1

COC#: 635

00173907

Requested Analysis Filtered (Y/N)

SEMO Lab Project No./ Lab I.D

*See Additional Comments Below

Analysis Test ↓

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